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CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

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THE APPRAISAL OF CONTENT IS TENTATIVE.
(FOR KEY SEE REVERSE)

Location and Factory Subordination

1. The Kharkov Machine Tool Factory i/n Molotov (Kharkovskiy Stankostroitelnyy Zavod imeni Molotova) is located at No. 22 ulitsa Pervogo Maya, Ordzhonikidze Rayon, Kharkov. The factory is near the Losevo Railroad Station, which is about ten km south of the Kharkov-Balashovskiy Railroad Station. A branch line connects the factory with the Losevo station. 25X1

2. The factory belongs to the Ministry of Machine Tool Industry of the USSR and is directly subordinate to the Chief Directorate of Machine-Tool Building Industry (Glavstankoprom).

History of Factory

3. Construction of the factory began in 1932. The first cylinder-and-cone grinding machine (krugloshlifovalnyy stanok) with hydraulic feed was produced in 1934. The factory was completed in 1939.

4. Before World War II, the factory produced seven types of cylinder-and-cone grinding machines, both general-purpose and special, and four types of radial drilling machines. The most widely used cylinder-and-cone grinding machines at this time were models 3 N 42, 315, and 3 V 15. The 3 N 42 type was mass produced and delivered to motor-vehicle factories and garage workshops. The machines were used for grinding main journals and crankpins of crankshafts for motor-vehicle and tractor engines. Details of the machines, which are still in use, are as follows:

Maximum grinding length	1,500 mm
Height of centers	300 mm
Maximum grinding diameter	600 mm

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(NOTE: Washington distribution indicated by "X"; Field distribution by "#".)

The machine has an MT-5116 grinding-headstock (shlifovalnaya babka) electric motor of 5.5 kw and 1,000 rpm, and an IE-21-6 spindle-drive electric motor of 1.3 kw and 100 rpm.

5. Details of cylinder-and-cone grinding machine 315 with hydraulic feed were as follows:

Maximum distance between centers	750 mm
Maximum diameter of part being ground	150 mm
Weight	about 2 tons

Other cylinder-and-cone grinding machines had maximum distances of 750, 1,000, 1,500, and 2,000 mm between centers and maximum diameters of 150, 200, and 250 mm of parts being ground.

6. Details of radial-drilling machines were as follows:

Maximum spindle radius	1,200 mm
Maximum drilling diameter	50 mm
Average weight of machine	about 3.5 tons

In 1940, the factory produced about 1,600 to 1,700 grinding and radial-drilling machines.

7. During the German invasion in 1941, the evacuation of the factory was hurried and disorderly, and some of the personnel and equipment were left behind. During the war, the factory was badly damaged; after the liberation of Kharkov in 1943, measures were immediately taken to repair the factory. In 1945, restoration of the factory had almost been completed and in some cases factory shops, including the foundry, were enlarged.. Modern equipment of foreign and Soviet manufacture was installed in the factory, which began producing machine tools again.

Fourth Five-Year Plan (1946-1950)

8. In the Fourth Five-Year Plan, the factory director was Daniil Godyevich Lyudmirskiy. Under the plan, the factory was to produce cylinder-and-cone grinding machines only; radial drilling machines were to be produced by the Odessa Radial Drilling Machine Tool Factory.

9. At first, the Kharkov factory produced modernized versions of the cylinder-and-cone grinding machines that it produced before the war. Models 3151 and 3152 were the modernized versions of the 315 and 316M. In 1945 and 1946, the factory also produced equipment for the Donbass coal mines.

10. In 1946 and 1947, the Design Bureau of the factory under Chief Designer V.P. Soloshenko evolved new types of cylinder-and-cone machines which included the 3 T 16, 3164, 3164A, 3420, 3421, 3423, 3430, 3488, 3488A, and 3489A machines. Some of these machines are of a heavier type. The 3164 weighs 12,500 kg; the 3164A, 14,500 kg; and the vertical (karuselnyy) grinding machine 3488A, 25,000 kg. These machines were built during the Fourth Five-Year Plan. The factory also produced semiautomatic cylinder-and-cone grinding machines, which included the semiautomatic Shag-1 machine for simultaneous grinding of bearing races (begovaya dorozhka) and sides of inner rings of conical precision roller bearings.

Fifth Five-Year Plan (1951-1955)

11. During the Fifth Five-Year Plan, a considerable increase has taken place in the production of heavy cylinder-and-cone grinding machines. Series production of light machines has continued. Heavy cylinder-and-cone grinding machines have been produced as follows:

a. Machines with distances between centers of 3,000, 4,000, 5,000, and 6,000 mm.

b. Roller-grinding machines weighing 90 tons for grinding rollers of mill trains.

c. Special cylinder-and-cone grinding machines weighing 45 tons for journals (sheyka) of heavy crankshafts.

d. Heavy machines weighing 80 tons for grinding granite and marble columns.

Machines with distances between centers of 7,000 and 8,000 mm are under construction in the Experimental Shop.

12. The following machines have been produced in the Kharkov factory since World War II:

a. Cylinder-and-cone grinding machine 3151 for grinding cylindrical parts. The machine is fitted with a hydraulic device (Gidrofitsirovan: sic; possibly Gidrofiksirovaniye). It had been in large-scale series production since 1946 and a modernized version for high-speed grinding is now being produced. Technical details of the machine are as follows:

Height of centers above table	125 mm
Maximum distance between centers	750 mm
Distance between axis of grinding wheel and line of centers	225-425 mm
Maximum angle of turn of upper table	± 5°
Diameters of parts being ground	up to 150 mm
Maximum grinding length	750 mm
Diameter of grinding wheel	450-600 mm
Three-phase electric motors:	
Grinding-wheel	5.8 kw, 1,500 rpm
Headstock	0.5 kw, 1,000 rpm
Hydraulic-pump	1.2 kw, 1,000 rpm
Cooling-liquid-pump	0.52 kw, 3,000 rpm
Length	2,260 mm
Width	1,590 mm
Height	1,700 mm
Weight	about 3,900 kg

b. Cylinder-and-cone grinding machine 3152 for grinding cylindrical parts. Except for the following data, details are the same as in the 3151 above.

Maximum distance between centers	500 mm
Maximum grinding length	500 mm
Diameter of grinding wheel	480-600 meters
Maximum width of grinding wheel:	
600-mm diameter	63 mm
500-mm diameter	100 mm
Length	2,000 mm
Width	1,880 mm
Height	1,770 mm
Weight	3,500 kg

c. Cylinder-and-cone grinding machine 3160 for external grinding of cylindrical and conical surfaces. The grinding of the latter is effected by turning the upper table. The machine is fitted with a hydraulic device. Technical details of the machine are as follows:

Height of centers above table	160 mm
Maximum distance between centers	1,000 mm
Maximum diameter of part being ground	250 mm
Maximum angle of turn of upper table	± 7°
Diameter of grinding wheel	500-750 mm
Maximum width of grinding wheel	75 mm

Maximum grinding length	1,000 mm
Electric motors:	
Grinding-wheel	10 kw
Headstock	0.5 kw
Hydraulic-pump	1.2 kw
Cooling-liquid-pump	0.52 kw
Length	3,320 mm
Width	2,225 mm
Height	1,500 mm
Weight	6,000 kg

d. Incisions (vreznoy) cylinder-and-cone grinding machine 3162 for incision and profile grinding. This machine is very similar in design to the 3160 machine but has a hydraulic-incision mechanism. The 3162 is 2,300 mm wide and has more powerful electric motors than the 3160. It has a grinding-wheel electric motor of 14 kw and a headstock electric motor of one kw.

e. Cylinder-and-cone grinding machine 316M for circular external grinding of parts. This machine is in large-scale series production and is used extensively in garages and motor-vehicle and tractor workshops. In 1949, this machine was adapted for high-speed grinding. Details of the machine are as follows:

Height of centers above stand (stanina)	150 mm
Maximum distance between centers	1,000 mm
Diameter of part being ground	10-250 mm
Maximum grinding length	1,000 mm
Diameter of grinding wheel	480-750 mm
Width of grinding wheel	75 mm
Diameter of aperture of grinding wheel	305 mm
Three-phase electric motors:	
Grinding-wheel	7.8 kw, 1,455 rpm
Headstock	0.55 kw, 940 rpm
Hydraulic-pump	1.8 kw, 950 rpm
Cooling-liquid-pump	0.125 kw, 2,300 rpm
Length	2,800 mm
Width	1,710 mm
Height	1,500 mm
Weight	about 4,000 kg

f. Universal cylinder-and-cone grinding machine 3130 used for internal and external grinding of cylindrical and conical surfaces:

Height of centers	165 mm
Distance between centers	750 mm
Maximum diameter of part being ground externally	300 mm
Maximum grinding length	750 mm
For internal grinding:	
Maximum diameter of aperture being ground	100 mm
Minimum diameter of aperture being ground	27 mm
Maximum length of aperture being ground	100 mm
Dimensions of grinding wheels:	
For external grinding	350 x 32 x 127 mm
For internal grinding	25 x 13 x 6 mm
Maximum turn of upper table to one side	10°
Maximum turn of headstock	90°
Maximum turn of grinding wheel	± 90°
Length	2,260 mm
Width	1,590 mm
Height	1,850 mm
Weight	3,900 kg

g. Cylinder-and-cone butt-end grinding machine (tortse-krugloshlifovalnyy stanok) 3 T 16 for circular external central grinding of parts and for butt-end grinding at an angle:

Height of centers above table	230 mm
Maximum distance between centers	1,000 mm
Diameter of part being ground	10-250 mm
Diameter of grinding wheel	460-600 mm
Width of grinding wheel	75 mm
Maximum grinding length	1,000 mm
Electric motors:	
Grinding-wheel	7.8 kw, 1,455 rpm
Headstock	0.55 kw, 940 rpm
Hydraulic-pump	1.8 kw, 930 rpm
Cooling-liquid-pump	0.125 kw, 2,800 rpm
Length	2,800 mm
Width	1,765 mm
Height	1,635 mm
Weight	about 4,350 kg

h. Cylinder-and-cone grinding machine 3164 used for external grinding of cylindrical and conical surfaces:

Height of centers above table	210 mm
Maximum distance between centers	2,000 mm
Diameter of part being ground	40-350 mm
Maximum grinding length	2,000 mm
Angle of turn of upper table	± 3.5°
Three-phase electric motors:	
Grinding-wheel	15.2 kw, 975 rpm
Headstock	0.7 kw, 720/1,470 rpm
Hydraulic-pump	2.2 kw, 1,440 rpm
Length	6,300 mm
Width	2,450 mm
Height	1,630 mm
Weight	12,500 kg

i. Cylinder-and-cone grinding machine 3164A(modified 3164) used for grinding heavy shafts up to 3,000 mm long. This machine differs from the 3164 in the following respects:

Maximum distance between centers	3,000 mm
Angle of turn of upper table	± 3°
Length	8,000 mm
Weight	14,500 kg

j. Grinding machine 3420 is used for regrinding (pereshlifovka) main journals and crankpins for crankshafts of motor-vehicle and tractor engines under conditions prevailing in motor-vehicle repair factories and machine and tractor workshops. Normal grinding of cylindrical and conical surfaces of various parts can also be carried out on this machine.

Height of centers	215 mm
Distance between centers	1,100 mm
Distance between axis of grinding wheel and line of centers	240-480 mm
Diameter of journal being ground in grinder rest (lyunet)	30-90 mm
Maximum radius of crank in crankshaft	80 mm
Maximum length of crankshaft being ground	1,100 mm
Maximum weight of part	80 kg

Three-phase electric motors:	
Grinding-wheel	5.8 kw, 1,455 rpm
Headstock	0.85 kw, 940 rpm
Cooling-liquid-pump	0.1 kw, 2,800 rpm
Length	2,800 mm
Width	1,700 mm
Height	1,600 mm
Weight	4,200 kg

k. Grinding machine 3421 for grinding crankpins (shatunnaya sheyka) of crankshafts for motor-vehicle and tractor engines under mass-production conditions. The machine is equipped with a hydraulic device for rapid feeding and withdrawing of grinding wheels.

Height of centers above table	255 mm
Maximum radius of rotation	210 mm
Radius of crank of crankshaft	40-80 mm
Maximum length of shaft being ground	1,100 mm
Maximum longitudinal movement of table	900 mm
Three-phase electric motors:	
Grinding-wheel	15.2 kw, 975 rpm
Headstock	1.8 kw, 950 rpm
Hydraulic-pump	1.8 kw, 930 rpm
Cooling-liquid-pump	0.1 kw, 2,800 rpm
Length	3,720 mm
Width	2,490 mm
Height	1,535 mm
Weight	about 8,500 kg

l. Grinding machine 3423 for regrinding main journals and crankpins of crankshafts for motor-vehicle and tractor engines under conditions prevailing in motor-vehicle repair factories and machine and tractor workshops. The machine can also be used for normal cylinder-and-cone grinding.

Height of centers above table	300 mm
Distance between centers	1,600 mm
Distance between axis of grinding wheel and line of centers	275-595 mm
Diameter of journal being ground in grinder rest	30-100 mm
Maximum radius of crank of crankshaft	110 mm
Maximum grinding length	1,600 mm
Maximum weight of part being ground	100 kg
Three-phase electric motors:	
Grinding-wheel	6 kw, 1,000 rpm
Headstock	0.85 kw, 1,000 rpm
Cooling-liquid-pump	0.1 kw, 2,800 rpm
Length	3,930 mm
Width	1,795 mm
Height	1,620 mm
Weight	about 6,000 kg

m. Grinding machine 3430 for rough grinding and finishing, by the duplicating method, of profiles of cams for crankshafts of motor-vehicle and tractor engines under mass-production conditions. The machine works on a semi-automatic cycle but can also be hand-controlled. The machine is equipped with a hydraulic device.

Height of centers above cradle (lyulka)	75 mm
Maximum distance between centers	900 mm
Distance between axis of grinding wheel and line of centers	260-340 mm

Maximum radius of rotation of part being ground	60 mm
Maximum elevation of cam being ground	15 mm
Diameter of journal being ground in grinder rest	20-60 mm
Maximum weight of piece being ground	30 kg
Three-phase electric motors:	
Grinding-wheel	5.8 kw, 1,500 rpm
Headstock	1.1 kw, 3,000 rpm
Hydraulic-pump	1.8 kw, 1,000 rpm
Cooling-liquid-pump	0.1 kw, 3,000 rpm
Length	2,880 mm
Width	1,920 mm
Height	1,700 mm
Weight	about 5,500 kg

n. Grinding machine 3433 for regrinding cams of crankshafts for motor-vehicle and tractor engines under conditions prevailing in motor-vehicle repair factories and machine and tractor workshops. Grinding of cams is effected by the duplicating method.

Height of centers above cradle	95 mm
Maximum distance between centers	1,260 mm
Distance between axis of grinding wheel and line of centers	260-500 mm
Maximum radius of part being ground	90 mm
Maximum elevation of cams	20 mm
Diameter of journal being ground in grinder rest	20-75 mm
Maximum admissible weight of part being ground	30 kg
Three-phase electric motors:	
Grinding-wheel	4.3 kw, 1,500 rpm
For spindle of part being ground	0.55 kw, 1,000 rpm
Cooling-liquid-pump	0.1 kw, 3,000 rpm
Length	2,800 mm
Width	1,700 mm
Height	1,500 mm
Weight	about 4,200 kg

o. Vertical grinding machine 3488 for total grinding of rolling contact bearing races of large over-all size (krupnogabaritnoye koltso podshipnikov kacheniya). The machine can grind internal and external surfaces, bearing races (begovaya dorozhka), rims (bortik), and butt ends (torets). The machine is fitted with five devices for trimming (pravka) grinding wheels under the following conditions:

(1) On a small radius (ball-bearing races)
(2) On a large radius (roller-bearing races)
(3) When grinding cylinders
(4) When grinding cones
(5) When grinding butt ends

This machine was produced for a year and then replaced by an improved machine, the 3488A.

p. Vertical grinding machine 3488A for the grinding of rolling contact bearing races of large over-all size. The machine can be used for various kinds of grinding, including external grinding of bearing races, rims, and butt ends.

Diameter of faceplate (planshayba)	1,800 mm
Height of faceplate above floor	910 mm
Distance from center of faceplate to stand (stoyka)	722 mm

Maximum external diameter of part being ground	1,500 mm
Minimum internal diameter of part being ground	600 mm
Revolutions of grinding spindles:	
Horizontal for stone with diameter of 600 mm	906-1,008 rpm
Horizontal for stone with diameter of 30 mm	1,713-2,504 rpm
Vertical	892-1,000 rpm
Three-phase electric motors:	
For vertical grinding spindle	17 kw, 1,460 rpm
For faceplate	4.2 kw, 1,500/750 rpm, 1,000/500 rpm
For slide movement	1.1 kw, 710/1,425 rpm
For raising of crosspiece	3.5 kw, 980 rpm
Length	3,950 mm
Width	3,100 mm
Height	3,600 mm
Weight	about 25,000 kg

q. Vertical grinding machine 3489A for grinding of rolling contact bearing races of large over-all size.

Diameter of part being ground	400-800 mm
Maximum height of race being ground	350 mm
Diameter of table	1,100 mm
Electric motor for driving vertical spindle	4.5 kw, 1,450 rpm
Length	2,980 mm
Width	2,400 mm
Height	3,060 mm
Weight	about 10,500 kg

r. Centerless (bestsentrovyy) grinding machine 3180 for external centerless grinding of parts with cylindrical, conical, and special-profile (fasonnyy) surfaces under conditions of series and mass production.

Maximum diameter of part being ground with normal appliances	75 mm
Minimum diameter of part being ground with normal appliances	5 mm
Diameter of grinding wheel	390-500 mm
Maximum width of grinding wheel	150 mm
Electric motors:	
Grinding-wheel	13 kw, 1,500 rpm
Driving-wheel	1 kw, 1,500 rpm
Hydraulic-pump	0.85 kw, 1,000 rpm
Cooling-liquid-pump	0.25 kw, 3,000 rpm
Length	2,265 mm
Width	1,650 mm
Height	1,620 mm
Weight	about 3,250 kg

In 1946, this machine was in large-scale series production. In 1947, production was stopped and handed over to the Moscow Internal Grinding Machine Factory (Moskovskiy Zavod Vnutrishlifovalnykh Mashin).

s. Semiautomatic cylinder-and-cone grinding machine Shag-1 for simultaneous grinding of bearing races and rims of internal raceways of conical precision roller bearings.

t. Cylinder-and-cone grinding machine KhSh-105 for grinding heavy crankshafts up to 6.5 meters long and weighing 3.5 tons.

u. Heavy stone-grinding machines for grinding granite and marble pillars. Only four machines have been produced.

v. Cylinder-and-cone grinding machines which were specially ordered for automatic production lines at motor-vehicle and tractor factories.

w. Machines for turning and grinding large steel and cast-iron rollers for mill trains and paper-making machines. These machines can handle rollers weighing 20 to 25 tons.

Output

13. In 1953, the factory produced about 2,400 light- and medium-weight grinding machines of various types and about 320 grinding machines of heavy and "unique" (unikalnyy) types.

Personnel

14. The factory employs about 4,600 workers. The chief personnel are as follows:

Director--I.A. Pankov
Chief engineer--Bordyuzhe (fnu)
Chief technologist--Bezborodko (fnu)
Chief power engineer--Savelyev (fnu)
Production chief--Pleskachevskiy (fnu)
Chief designer--Stepanov (fnu)

The Design Bureau employs about 50 designers including Berlyavskiy (fnu), Sheryshev (fnu), Kushlyanskiy (fnu), Grechko (fnu), Morozov (fnu), and Pakhomov (fnu).

Shops

15. In most shops, work is conducted in three shifts. The factory consists of the following shops:

Machine Shop (Mekhanicheskiy Tsekh) No. 1
Machine Shop (Mekhanicheskiy Tsekh) No. 2
Machine Assembly Shop (Mekhanosborochnyy Tsekh) No. 1
Machine Assembly Shop (Mekhanosborochnyy Tsekh) No. 2
Machine Assembly Shop (Mekhanosborochnyy Tsekh) No. 3
Machine Assembly Shop (Mekhanosborochnyy Tsekh) No. 4
Foundry (Liteynyy Tsekh)
Forge (Kuznechnyy Tsekh)
Thermic Shop (Termicheskiy Tsekh)
Pattern Shop (Modelnyy Tsekh)
Experimental Shop (Eksperimentalnyy Tsekh)
Electric Shop (Elektrotsekh)
Transport Shop (Transportnyy Tsekh)
Preparatory Shop (Zagotovitelnyy Tsekh)
Steam and Power Shop (Parosilovoy Tsekh)
Mechanical Repair Shop (Remontno-Mekhanicheskiy Tsekh)
Tool Shop (Instrumentalnyy Tsekh)

16. Machine Assembly Shops No. 1 and No. 4 each have two continuous production lines. The foundry has two conveyers.

Contacts with Other Factories

17. Large forgings for heavy machines are received from the Kramatorsk Heavy Machine Tool Factory i/n Stalin. Cylinder-and-cone grinding machines are sent in large quantities to Soviet motor-vehicle and tractor factories and motor-vehicle repair factories and tractor workshops. Special machines for the bearings industry are sent to all bearings factories and bearings-repair factories of the USSR. Special heavy machines were made for the Kharkov Transport Machine Building Factory.